iences. Less valuable have been topics centering on advice-giving and the expression of social amenities. Although personal problems may be discussed, topics dealing with sexual issues and anger between the members may increase anxiety and lead to regressive behaviors.

Schizophrenic therapy groups are cost-effective, they have been found to lower the rates of readmission to hospital and they are valued by patients, with attendance rates of more than 95% being reported. They are an important treatment modality when used in conjunction with antipsychotic medication and long-term follow-up.

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Update on Psychoneuroimmunology

THE RAPIDLY EMERGING interdisciplinary field of psychoneuroimmunology—also called neuroimmunomodulation, behavioral immunology or psychosocial neuroimmunology—is concerned with the complex bidirectional interactions between the central nervous system and the immune system and their clinical implications. Several acute and chronic naturally occurring stresses and depression have recently been shown to be immunosuppressive. The stress of medical school "examination week" activates latent herpes simplex virus infection to a greater degree in lonely students. Activation of the Epstein-Barr virus and lowered helper-suppressor T-cell ratios result from the chronic stress of providing family care to victims of Alzheimer's disease. Poor marital quality, a recent separation and divorce and consequent depression are associated with a reduction of several measures of immune function. Depressive illness requiring hospital admission (but not dysthymic disorders) is accompanied by immunosuppression as shown by reduced lymphocyte mitogenic responsiveness in vitro. Patients with endogenous depression associated with psychomotor agitation show a reduced sensitivity of lymphocyte β-adrenergic receptors. Depressed patients have a lower basal lymphocyte content of cytoplasmic glucocorticoid receptors than controls.

The close relationship between the central nervous system (CNS) and the immune system is emphasized by the findings of receptor sites for some psychotropic drugs on immunologically competent cells and by cell-surface similarities between neurons and lymphocytes. To illustrate, benzodiazepines stimulate monocyte chemotaxis, an effect likely mediated by the peripheral-type receptor. Thy-1 glycoproteins are major cell-surface constituents of thymocytes and neurons. French investigators have implicated lateral specificity in the cerebral cortex in neuroimmunoregulation, with possible cognitive versus affective influences on immunity. Left cortical lesions decrease T-cell numbers, responsiveness to mitogen and "natural killer" cell cytotoxicity. (Autoimmune and atopic diseases are more common in left-handed persons.)

Interest in the role of enkephalins and endorphins in mediating stress effects on immunity has increased considerably. Rats that receive intermittent foot shock stress, which produces opioid-dependent analgesia, show naloxone-reversible immunosuppression. Secretion of both adrenocorticotropic hormone (ACTH) and β-endorphin is controlled by corticotropin-releasing factor (CRF). In turn, the immune system secretes factors that influence CRF and opiocortin neurons. An anatomic substrate in the CNS exists for participation of the peptide systems in autonomic, immune and other physiologic homeostatic mechanisms, which tend to be disordered under conditions of stress, in disease and in aging. Met-enkephalin-like, morphinelike and β- and γ-endorphin receptors have been identified on lymphocytes. ACTH and β-endorphin can both behave like lymphokines. Both γ-interferon and the immunosuppressant drug cyclosporine modify symptoms of naloxone-induced abstinence syndrome in morphine-addicted rats. Edwin Blalock, PhD, at the University of Alabama at Birmingham says "It appears that the immune and neuroendocrine systems have the ability to signal each other through common or related peptide hormones and receptors."

New links are being forged between sleep research and psychoneuroimmunology. Interferon and other lymphokines can enhance slow-wave sleep, and interferon decreases rapid-eye-movement latency, suggesting that sleep may play an important role in recuperative processes. Interleukin 1 levels increase in conjunction with the onset of slow-wave sleep. Such findings suggest that disturbance of sleep, as occurs in conjunction with depression and with stress, might contribute to the associated impairment of immunity.

The organic brain syndrome found in about 40% of patients with the acquired immunodeficiency syndrome (AIDS), a presenting symptom in as many as 10%, is based on the neurotropic and the lymphotropic natures of the human immunodeficiency virus, which infects monocytes and microglia of the CNS as well as other glial cells and neurons. Psychosocial research in AIDS suggests that attitudes, affects, social support and coping may affect the duration of survival. Current psychoneuroimmunologic research in AIDS and the AIDS-related complex should provide more specific clinical and immunologic correlates of psychosocial variables.

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Methods to Aid Memory in the Aged

THERE ARE GOOD NEWS and bad news about improving memory with aging. The good news is that 90% of us will never become demented. The bad news is that the normal memory loss experienced by a typical 75-year-old person is a loss of 30% when compared with their performance during youth. Because there is little to be done about dementia itself, I will discuss improving normal memory losses with aging.

First of all, the terms have been changed. This normal loss used to be called "benign senescent forgetfulness." It was

called benign because no one ever died of it. But this term often led physicians to minimize elders' complaints. Yet a loss of 30% would make most people worry: what was benign for physicians appeared malignant to patients. To underline the seriousness of the problem, the National Institute of Mental Health has given such losses the name "age-associated memory impairment."

What can be done about this memory impairment? First of all, it is important to realize that its psychological causes are at least as important as the biologic ones. The psychological causes include a reduced ability to concentrate, less use of organizational schemes and less use of visual image-based associations. These factors can be remedied.

In a recent review I documented that a series of different types of interventions from a number of independent laboratories has shown statistically significant and long-lasting improvement of function by psychological interventions. These interventions include the use of image associations and organizational schemes (mnemonics), relaxation therapies to reduce anxiety that robs elders of their ability to concentrate and a host of techniques for specific situations, such as reading retention, numbers or absentmindedness. These techniques have been compiled into a workbook that can be used by therapist or patient alike. Using such techniques in the office setting should lead to documentable improvement in function of most elders with age-associated memory inpairment.

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Environmental Sensitivity—Allergic to Everything?

A MEDICAL SUBCULTURE has evolved comprising patients claiming polysymptomatic, multisystem, chronic "allergic" reactions to numerous environmental "excitants" present in food, air, water, drugs, fabrics and many other sources and a group of physicians calling themselves clinical ecologists, who believe their treatments can benefit these patients. Before connecting with clinical ecologists, these patients were frustrated in their often-extensive efforts to find physicians who could say, "I know what's wrong with you and I can help you." The patients are diverse, although several characteristics predominate: most are women in their 30s and 40s, stable employees in service or technical-professional occupations (often medical or high-tech settings) who have education beyond high school. They had been treated for several illnesses, frequently had respiratory allergies, had had viral infections and may have been treated for hormonal irregularities.

The severity of the restrictions imposed on these patients' lives before and after their "diagnosis," both by themselves and by the clinical ecology treatment regimen, is impressive. They very often do not return to work and withdraw from social contacts. They monitor their diet closely and avoid tobacco smoke and perfumed products such as soap, toothpaste and deodorant and extend their restrictions to everyone in proximity. Their almost phobic reactions are triggered by solvents, gas heat and vehicle exhausts. They may wear only "natural fiber" clothing, modify their residences by installing electric heat and removing rugs and drapes or moving to "purer" mountain, coastal or desert locales. Some even carry oxygen tanks and masks when away from their "safe" environments. While they may be labeled, according to the *Diagnostic and Statistical Manual of Mental Disorders*, third edition, revised, as having "somatization disorder" or "atypical somatoform disorder," all seem to share a sense of "vulnerability" to illness and environmental hazards and the need to simplify and control their lives. Their efforts to avoid the substances they and their physicians deem harmful preclude participating in most work environments and result in declarations of disability.

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Long-term Effects of Terrorism on Children

ALTHOUGH AMERICAN CHILDREN are the frequent targets of violence in the form of abusive injury, they are rarely victims of terrorist attack. Youngsters elsewhere in the world, however, are not so fortunate, and studies of the psychiatric sequelae of terrorism have begun to appear in the literature. Terrorism is the exertion of force threatening annihilation to project a sense of powerlessness on the target population. Its use seems to be increasing, and it is defended as a legitimate means to achieve a desired political objective. In many instances adolescents have assumed the role of combatant and have thereby become the agents of intimidation and destruction.

The pathogenic element of terrorism, apart from any physical injury, is the experience of psychic trauma that results in helplessness in the face of intolerable danger, anxiety and arousal. The susceptibility of any child to psychic trauma is a function of several factors, including genetic, constitutional and personality makeup; past life experiences; age and state of mind, and the content and intensity of the event. In those situations in which children have been held hostage or exposed to a murderous assault, most will suffer the posttraumatic stress disorder. The symptoms of this syndrome for children involve deleterious effects on cognition, emotions, interpersonal relations, behavior and vegetative function. In addition, the developmental phase of the child contributes to the specific constellation of findings. A preschool child is likely to show regression, school-age children often present with somatic complaints and traumatized adolescents commonly display acting-out behavior.

The natural history of the posttraumatic stress disorder in children has not been fully elucidated, but evidence is accumulating that the long-term effects of terrorism can be substantial. Children continue to show posttraumatic play and reenactments, seen as repetitive, unsatisfying activities organized around traumatic themes. Other persistent symptoms include nightmares and night terrors, residual traumatic anx-